



## Diagnostic Evaluation of Premalignant & Malignant Cervical Lesions by Colposcopy versus Cytology & Histo-pathology

### Pathology

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### ABSTRACT

**Background:** Cancer cervix is the second most common cancer in women after carcinoma breast in the world, while it is the leading cancer in women in the developing countries including India. Detected in pre-malignant stages, cervical cancer is preventable and curable, so detection of premalignant lesions is very important. The cervical cytology examination followed by a colposcopic examination and biopsy are the common tool for the early detection and the establishment of diagnosis of the cervical inflammatory and precancerous lesions. **Objectives:** The study was undertaken with the aim of evaluation the various techniques individually as well as in complementary to each other in identification of premalignant and malignant of lesions of cervix. **Material and Methods:** The present study was done in Department of Pathology of Career Institute of Medical Sciences, Lucknow in collaboration Obstetrics & Gynaecology department of same institute in between July 2016- December 2016 (ie.6 months). A prior approval was taken from Institutional Ethical Committee. Outdoor, Indoor patients were taken from hospital of Career Institute of Medical Sciences and evaluated by cytology, Colposcopy and colposcopy directed biopsy in Department of Pathology. **Results:** A total 110 cases were taken clinically examined and diagnosed as having premalignant and malignant lesions of cervix. Most of the cases were clinically diagnosed as chronic cervicitis with erosion i.e. 50 cases (45.45%), followed by chronic cervicitis i.e. 42 cases (38.18%). 18 cases were suspicious of malignancy. In present study the colposcopy was negative in 64% cases which included normal, unsatisfactory and inflammatory cases. In histo pathological findings maximum number of cases were of premalignant (46%) and malignant condition (9.1%). On correlating cytology finding with histology, sensitivity of cytology was calculated to be 55.7% where as specificity was determined was 95.9%. in the study group 36 patient were showing premalignant and malignant lesion on cytology where as 61 cases were positive by histopathology. **Conclusion:** The cytological, colposcopic and histo pathological finding in the present study pattern emphasizes that a combined approach not only improves the diagnostic accuracy but help in identifying the lesion at pre invasive stage.

### KEYWORDS:

Cancer Cervix, Cervical Intraepithelial Neoplasia (CIN), Colposcopy, Histo Pathology.

#### Introduction:

Cancer cervix is the second most common cancer in women after carcinoma breast in the world, while it is the leading cancer in women in the developing countries including India.<sup>1</sup> More than 80% patients present in a fairly advanced stage.<sup>2</sup> According to the GLOBOCAN statistics, the estimated incidence of cervical cancer in the world is 528000 per year with 266000 annual deaths attributed to cervical cancer (approximately 50%).<sup>3</sup> India alone contributes to 23% of the total global cases annually. With an annual 67000 deaths, cervical cancer remains one of the major causes of cancer related mortality in India.<sup>4</sup> Cervical intraepithelial neoplasia (CIN) is a premalignant condition of the uterine cervix. Detected in pre-malignant stages, cervical cancer is preventable and curable, so detection of premalignant lesions is very important.

The cervical smear test is designed primarily to identify abnormalities of the squamous epithelium of the cervix but the columnar cells of the cervix may also show dyskaryosis so smear may also, therefore detect the presence of adenocarcinoma in situ or adenocarcinoma of cervix. The preinvasive precursor termed as cervical intraepithelial neoplasia (CIN). In these lesions all or most of the epithelium show the cellular feature of carcinoma but confined to epithelium.

Although these early precursor lesion may be asymptomatic but they are detectable by currently available method of diagnosis. These method are papanicolaou smear, colposcopy cervical biopsy. Clinical utilization of pap smear is very limited because of high false negative rate. So it should be complimented by colposcopy and Colposcopy directed biopsy to further confirm the diagnosis. The cervical cytology examination followed by a colposcopic examination and biopsy are the common tool for the early detection and the establishment of diagnosis of the cervical inflammatory and precancerous lesions.

#### Aim and objectives:

The study was undertaken with the aim of evaluation the various techniques individually as well as in complementary to each other in identification of premalignant and malignant of lesions of cervix.

#### Material and methods:

The present study was done in Department of Pathology of Career Institute of Medical Sciences, Lucknow in collaboration Obstetrics &

Gynaecology department of same institute in between July 2016- December 2016 (ie. 6 months). A prior approval was taken from Institutional Ethical Committee. Outdoor, Indoor patients were taken from hospital of Career Institute of Medical Sciences and evaluated by cytology, Colposcopy and colposcopy directed biopsy in Department of Pathology.

Samples of prepubertal and postmenopausal women who presented with gynaecological complaints, women with invasive carcinoma of cervix and other genital malignancies, pregnant and puerperial women, unmarried women and post hysterectomy cases were excluded from the study.

#### PAPsmear samples

Pap smear samples of the female patients fulfilling the inclusion criteria were collected. Samples smeared on two glass slides (one slide with ectocervical material and a second slide with endocervical material) were received in the Pathology department in Coplin jar containing fixative- 95% ethyl alcohol or equal parts of 95% ethyl alcohol and ether. Pap smear was taken using Ayre's spatula after exposing cervix with Cusco's speculum. The prepared PAP smear slides were then stained according to the conventional PAP technique and examined under a compound light binocular microscope for cytological examination. The cytological interpretation of the smears was made according to the Bethesda System 2014 reporting criteria.<sup>5</sup> The findings were recorded. All these female patients were also subjected to colposcopy and colposcopy guided cervical biopsy.

#### Colposcopy reports

Colposcopy reports of the female patients fulfilling the inclusion criteria of this study were collected from Gynaecology Department. For colposcopy examination, BORZE INC Colposcope -model DVC 6000 (with zoom upto 40x) was used. Colposcopy diagnosis was made based on Modified Reid's Colposcopic Index.<sup>6,7</sup> The findings were recorded. All these female patients underwent pap smear examination earlier and were also subjected to colposcopy guided cervical biopsy.

#### Colposcopy guided cervical biopsy samples

Colposcopy guided cervical biopsy samples of the female patients fulfilling the inclusion criteria of this study were collected. Biopsy specimens were received in the Pathology department in 10% formalin

fixative solution. Cervical biopsy was taken from abnormal areas by punch-biopsy forceps under colposcopic guidance. The biopsied tissues were then subjected to detail gross examination. Routine tissue processing was done. Sections were cut and were stained with Haematoxylin and Eosin stain and mounted in DPX. The slides prepared were examined under a compound light binocular microscope for histopathological examination. Biopsy results were categorized according to CIN (Cervical intraepithelial neoplasia) and SIL(Squamous intraepithelial lesion) classification systems.<sup>8</sup> The findings were recorded. The diagnosis of premalignant lesions of cervix was based on final histopathology report obtained. All these female patients underwent PAP smear examination and colposcopy examination before they were subjected to colposcopy guided cervical biopsies.

**Statistical analysis**

The descriptive statistics are presented. The results are presented in percentages. The Chi-square test was used to compare the categorical variables. The sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) were calculated for PAP smear and colposcopy taking histopathological finding as gold standard. The p-value <0.05 was considered significant. All the analysis was carried out on SPSS 16.0 version (Chicago, Inc., USA).

**Results:**

The study was conducted on outdoor and indoor patient taken from Career Institute of Medical Sciences, Lucknow. A total 110 cases were taken clinically examined and diagnosed as having premalignant and malignant lesions of cervix. These cases were further studied as shown in Table 1.

**TABLE 1: DISTRIBUTION OF CASES ACCORDING TO CLINICAL DIAGNOSIS**

Sl. No.	Clinical diagnosis	No. of cases	Percentage
1.	Chronic cervicitis	42	38.18%
2.	Chronic cervicitis with erosion (bad cervix)	50	45.45%
3.	Malignant ?	18	16.37%
4.	Total	110	100

Most of the cases were clinically diagnosed as chronic cervicitis with erosion i.e. 50 cases (45.45%), followed by chronic cervicitis i.e. 42 cases (38.18%), 18 cases were suspicious of malignancy.

**TABLE 2: DISTRIBUTION OF CASES ACCORDING TO AGE**

Sl. No.	Age group	No. of cases	% age
1.	≤20 yr	-	-
2.	21 – 25 yr	10	9.09%
3.	26 – 30 yr	28	25.45%
4.	31 – 35 yr	47	42.73%
5.	36 – 40 yr	12	10.91%
6.	41 – 45 yr	08	07.27%
7.	46 – 50 yr	03	02.73%
8.	≥ 50 yr	02	01.82%
	Total	110	100%

Mean age of lesions was 33.3 + 6.1 SD. The age distribution of the cases showed that maximum number of cervical lesion were seen in 4th decade of life (42.73 %), followed by 3rd decade (25.45 %). Mean age was 33.3 yr. No cases recorded below 20 yr of age.

**TABLE 3: DISTRIBUTION OF CASES ACCORDING TO MAIN PRESENTING SYMPTOMS**

Sl. No.	Symptom	No. of cases	Percentage
1.	Vaginal discharge	58	52.73
2.	Menstrual disturbance	22	20.00
3.	Backache	18	16.36
4.	Post coital bleeding	06	05.45
5.	Burning during micturation	04	03.64
6.	dyspareunia	02	01.82

The commonest presenting symptom was discharge per vaginum 58 (52.73%), menstrual disturbances were the next common presentation in 22 patient i. e. 20% and backache was the main complaint in 16.36% patient.

In present study the colposcopy was negative in 64% cases which included normal, unsatisfactory and inflammatory cases. Detection rate for pre malignant and malignant lesion was 36% out of which most of cases belong to mild dysplasia (18.34%). It is compatible with the aceto white epithelium as a common finding.

In histo pathological findings maximum number of cases were of premalignant (46%) and malignant condition (9.1%) of which CIN I was diagnosed in 31 (28.18%) CIN II in 12 (10.91%) and CIN III in 8 (7.27%). Invasive carcinoma was diagnosed in 10 cases (9.1%). Increased number of detection of premalignant cases by cervical biopsy was due to prompt screening by vaginal cytology and colposcopy as a result of this there is increased percentage of cases of CIN I in present study.

**TABLE 4: CORRELATION OF CYTOLOGY + ≥COLPOSCOPIC DIGNOSIS WITH HISTOPATHOLOGY IN 60 CASES**

Combined Cytology and Colposcopy	Total case	Histological diagnosis					
		Normal	Inflamm.	CIN I	CIN II	CIN III	Ca
Normal	-	-	-	-	-	-	-
Inflamm.	20	-	18	02	-	-	-
CIN I	22	-	-	21	01	-	-
CIN II	10	-	-	-	08	02	-
CIN III	05	-	-	-	-	04	01
Invasive Ca	03	-	-	-	-	-	03
Total	60	-	18	23	09	06	04

True Positive cases were 40 compared to True Negative (18), False Positive (0), False Negative (02). Sensitivity = TP/TP + FN was 95.2% whereas Specificity 100%. Both Positive predictive value and Negative predictive value were 100% each. No False positive were recorded whereas False negative cases were 4.7%.

**Discussion:**

Carcinoma cervix in developing countries poses a great threat to oncologist, gynaecologist in the whole world. As its incidence is increasing in every decade, though effective screening methods are available.

As we all know that invasive cervical carcinoma is preceded by pre invasive precursor lesions known as cervical intraepithelial neoplasia (CIN). The purpose of all the available screening methods used in the diagnosis of cervical lesions is to detect the pre-invasive precursor lesions, which otherwise escape recognition by simple methods of clinical examination.

Cytology is considered to be the most practical method of screening and its effectiveness in reducing mortality from carcinoma cervix has been documented by several studies, but in the presence of an abnormal smear a histo pathological diagnosis is essential to decide further definitive management. But a random cervical biopsy in the absence of any visible lesion may lead to false negative histological diagnosis. Thus an accurate technique is needed to locate cervical lesions. Colposcopy is one such noninvasive technique. The accuracy of colposcopy in the clinical diagnosis of cervical lesions in patient with abnormal cytology has been documented by several author. The purpose of this study was to demonstrate the practical value and diagnostic accuracy of cytology alone and cytology in conjunction with colposcopy in patient with cervical lesions. Cytological and histopathological examination were conducted on all patients while colposcopy was performed on 60 patients. Histopathological diagnosis was taken as a gold standard to evaluate the accuracy of cytologic smears and colposcopy.

Most of the cases taken in present study were clinically diagnosed as chronic cervicitis with erosion i.e. 50 cases (45.45%) followed by chronic cervicitis i.e.38.18% cases suspicious of malignancy (16.37%). According to table No. II cervical lesions were found mostly above the age of 30 years (66%). The mean age of women with cervical lesions was 33.3 + 6.1 SD. It is estimated that approximately 1–2% of women have CIN2+ each year.9,10,11

In present study the colposcopy was negative in 64% cases which included normal, unsatisfactory and inflammatory cases. Detection rate for pre malignant and malignant lesion was 36% out of which most

of cases belong to mild dysplasia (18.34%). It is compatible with the aceto white epithelium as a common finding.

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On correlating cytology finding with histology in Table IV sensitivity of cytology was calculated to be 55.7% where as specificity was determined was 95.9%. in the study group 36 patient were showing premalignant and malignant lesion on cytology where as 61 cases were positive by histopathology. Overall accuracy of the method was 94.4%. false positive rate was 4.08% where as false negative rate was 44.2%. the results of presented study thus comparable to Klinsman et al 1980 who gave their accuracy rate of 92.8% and and rate of false positivity as 1.45%.

#### Conclusion:

The cytological, colposcopic and histo pathological finding in the present study pattern emphasizes that a combined approach not only improves the diagnostic accuracy but help in identifying the lesion at pre invasive stage. The result also necessitates the use of regular pap screening and colposcopic examination in females of reproductive age group above 3rd decade.

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